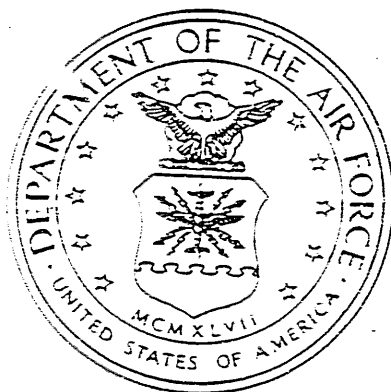


AD-A208 565

DEPARTMENT OF THE AIR FORCE

SUPPORTING DATA FOR FISCAL YEAR 1990/91 BIENNIAL BUDGET ESTIMATES SUBMITTED TO CONGRESS JANUARY 1989



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DESCRIPTIVE SUMMARIES

RESEARCH, DEVELOPMENT, TEST AND EVALUATION

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FY 1990/1991 BIENNIAL RDT&E DESCRIPTIVE SUMMARY

Program Element: #0102433F Budget Activity: B - Strategic Programs
 PE Title: NUDET Detection System (NDS)

A. (U) RESOURCES (\$ in Thousands)

Project Number	Title	FY 1988 Actual	FY 1989 Estimate	FY 1990 Estimate	FY 1991 Estimate	To Complete	Total Program
XXXI	NUDET Detection System (NDS)	7.272	10,306	6,735	3,131	Continuing	TBD

B. (U) BRIEF DESCRIPTION OF ELEMENT:

The Unified and Specified Commands require a highly survivable capability to detect, locate, and report any nuclear detonation (NUDET) on a global basis in near real time. NUDET information supports post-impact selection of appropriate retaliatory options in response to a nuclear attack against North America, as well as strike confirmation, and damage assessment. NUDET information is vital to the effective management of U.S. forces through the trans- and post-attack phases of a nuclear conflict. Reports to command centers of weapon effectiveness will be vital in managing strategic reserve forces and re-establishing a command structure. NDS data could be a major information component during negotiations to terminate a nuclear conflict. The NUDET Detection System consists of sensors integrated on the operational Navstar Global Positioning System (GPS) satellites plus a user segment consisting of Ground/Airborne Integrated Terminals (G/AIT). The NDS satellite payload consists of X-ray, optical and electromagnetic pulse (EMP) sensors. These sensors, when coupled with the extremely precise GPS timing capability, will provide location of nuclear bursts worldwide.

These data are cross-linked to other GPS/NDS satellites which act as relay points. This cross-linking of information, when used with at least 18 satellites, will allow a user on one side of the earth to receive NUDET data from the opposite side. A broad range of users (National Command Authorities, Strategic Air Command, US Space Command, other Unified and Specified Commands) will receive NUDET data, direct from the spacecraft, on the precise location, yield, count, time, and height of burst.

This program element complies with PE 0301357F which provides for the integration of these NDS sensors on GPS spacecraft.

C. (U) PROGRAM ACCOMPLISHMENTS AND PLANS:

(U) Project XXXI, NUDET Detection System:

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Program Element: 0102433P Budget Activity: 3 - Strategic Programs
PE Title: NUDET Detection System (NDS)

This project develops the EMP sensor for the GPS satellites and develops the Ground/Airborne Integrated Terminal (G/AIT) to provide authorized users direct receipt of NDS nuclear detonation data. It also provides multiple redundancy of the data transmission for increased system availability and survivability.

(U) FY 1988 Accomplishments:

- (U) Continued integration efforts for the NDS payload on the GPS production spacecraft.
- (U) Continued G/AIT and EMP sensor development and DT&E.
- (U) Began the NDS terminal reliability improvement program.
- (U) Initiated G/AIT procurement for high priority users.
- (U) Completed satellite-to-satellite crosslink development.

(U) FY 1989 Planned Program:

- (U) Begin engineering development and requalification of the NDS payload for the GPS replenishment satellites.
- (U) Begin aircraft integration/modification activities to support Development Test and Evaluation (DT&E) of the G/AIT.
- (U) Install PSD G/AIT at SAC's Proof-of-Concept/Experimental Testbed (POC/ET) and DCA's Modular Building Block (MBB) to support testing for the ground configuration.
- (U) Continue the G/AIT reliability improvement program.
- (U) Insert/retrofit new antenna technology into G/AITs.
- (U) Perform enhancements to PSD software for final production configuration.
- (U) Continue production activities.

(U) FY 1990 Planned Program:

- (U) Conclude G/AIT development and continue production to satisfy user requirements.
- (U) Continue integration/testing activities of PSD G/AITs.
- (U) Continue integration engineering for NDS airborne user terminal and start DT&E on E-4B NEACP aircraft.
- (U) Complete engineering development and start requalification of NDS sensors for installation into GPS Block IIR satellites.
- (U) Complete PSD software enhancements and new antenna technology insertion/retrofit for G/AITs.

(U) FY 1991 Planned Program:

- (U) Continue integration, field testing, and preoperational support of PSD G/AITs.
- (U) Begin development of fixes for deficiencies identified during DT&E.
- (U) Begin development of required operational improvements.

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Program Element: 0102433F Budget Activity: #3 - Strategic Programs
 PE Title: NUDET Detection System (NDS)

(U) Program to Completion:

- (U) This is a continuing program.
- (U) NDS sensor design and production are keyed to the GPS satellite schedule.
- (U) Outyear RDT&E funds will support the development of fixes for deficiencies identified during DT&E and required system operational improvements.

(U) Work Performed By: System development and procurement is accomplished by Air Force Systems Command's Space Division, Los Angeles AFB, CA

Rockwell

International, Seal Beach, CA, integrates the NDS sensors on GPS satellites and produces the EMP sensor. Science Applications International Corporation, Manhattan Beach, CA, and the Aerospace Corporation, El Segundo, CA, provide systems engineering support. Sandia National Laboratories, Albuquerque, NM, and Los Alamos National Laboratory, Los Alamos, NM, are under contract to the Department of Energy to produce the X-ray and optical nuclear detonation sensors. Texas Instruments, Dallas, TX, is developing and will produce the G/AIT. E-Systems, Garland, TX, is developing the EMP receiver/processor for the satellite.

(U) Related Activities:

- (U) Program Element #0305165F, Global Positioning System (GPS) Space Segment.
- (U)
- (U) Program Element #0301357F, NUDET Detection System (NDS).
- (U) Program Element #0305999F, Data Analysis.
- (U) Program Element #0302015F, NEACP/E-4B Class V Modifications.
- (U) There is no unnecessary duplication of effort within the Air Force or the Department of Defense.

(U) Other Appropriation Funds (\$ in Thousands):

Missile Procurement (BA 27):

	FY 1988	FY 1989	FY 1990	FY 1991	To	Total
	<u>Actual</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Estimate</u>	<u>Complete</u>	<u>Program</u>
Cost	11,900	0	0	18,112	Continuing	TBD
Quantity	4	0	0	0	Continuing	TBD

Other Procurement, BA 83

Funds	14,170	0	0	0	Continuing	TBD
Quantity	2	0	0	0	Continuing	TBD

(U) International Cooperative Agreements: Not Applicable.

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